

PATENT

Atty Docket No.: 200310982-1  
App. Ser. No.: 10/660,297IN THE CLAIMS:

*Please find below a listing of all of the pending claims. The status of each claim is set forth in parentheses.*

1. (Original) A data storage device comprising:

a probe tip mounted on a suspension mechanism;

a data storage layer;

at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer; and

a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

2. (Original) The data storage device of claim 1 wherein the data storage layer is in contact with the probe tip.

3. (Original) The data storage device of claim 2 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or a protrusion.

4. (Original) The data storage device of claim 1 wherein the data storage layer comprises a polymer material.

5. (Previously Presented) The data storage device of claim 1 wherein the at least one conducting layer comprises a conducting thin film.

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6. (Previously Presented) The data storage device of claim 5 wherein the conducting thin film comprises at least one of a deposited metal film of Mo, Cu, Ta, and an alloy.

7. (Previously Presented) The data storage device of claim 1 wherein the at least one conducting layer comprises a conducting substrate.

8. (Original) The data storage device of claim 7 wherein the conducting substrate comprises a doped silicon material.

9. (Original) The data storage device of claim 1 wherein the suspension mechanism includes a flexible cantilever.

10. (Original) The data storage device of claim 9 wherein the capacitance is formed on at least one side of the flexible cantilever.

11. (Original) The data storage device of claim 9 wherein a first capacitance is formed on a first side of the flexible cantilever and a second capacitance is formed on a second side of the flexible cantilever.

12. (Original) The data storage device of claim 11 wherein the change in capacitance comprises a difference in capacitance between the first capacitance and the second capacitance.

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13. (Original) A method of reading data from a data storage device comprising:  
suspending a probe tip over a data storage layer via a suspension mechanism;  
providing at least one conducting layer wherein a capacitance is formed between the  
suspension mechanism and the at least one conducting layer; and  
sensing a change in the capacitance based on a displacement of the probe tip due to  
the presence of a bit.

14. (Original) The method of claim 13 wherein the data storage layer comprises a polymer  
material.

15. (Original) The method of claim 13 wherein the at least one conducting layer comprises a  
conducting thin film.

16. (Previously Presented) The method of claim 15 wherein the conducting thin film  
comprises at least one of a deposited metal film of Mo, Cu, TA, and an alloy.

17. (Original) The method of claim 13 wherein the at least one conducting layer comprises a  
conducting substrate.

18. (Original) The method of claim 17 wherein the conducting substrate comprises a doped  
silicon material.

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19. (Original) The method of claim 13 wherein the suspension mechanism further includes a flexible cantilever and the act of providing at least one conducting layer further comprises providing a conducting layer within the suspension mechanism whereby a capacitance is formed between the conducting layer and the flexible cantilever.

20. (Original) The method of claim 13 wherein the suspension mechanism further includes a flexible cantilever and the act of providing at least one conducting layer includes providing a first conducting layer on a first side of the flexible cantilever and a second conducting layer on a second side of the flexible cantilever wherein a first capacitance is formed on the first side of the flexible cantilever and a second capacitance is formed on the second side of the flexible cantilever.

21. (Original) The method of claim 20 wherein the act of sensing a change in capacitance comprises sensing a difference in capacitance between the first and second capacitance.

22. (Original) The method of claim 13 wherein the data storage layer includes the bit and the bit comprises at least one of a pit or protrusion.

23. (Original) A computer system comprising:

a central processing unit; and

a data storage device coupled to the central processing unit comprising:

a probe tip mounted on a suspension mechanism;

a data storage layer;

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at least one conducting layer wherein a capacitance is formed between the suspension mechanism and the at least one conducting layer; and

a sensor for sensing a change in the capacitance based on a displacement of the probe tip due to the presence of a bit.

24. (Previously Presented) A data storage device comprising:

a probe tip mounted on a flexible suspension mechanism;

at least one capacitor coupled to the flexible suspension mechanism; and

a sensor for sensing a change in capacitance of the at least one capacitor based on a displacement of the probe tip due to the presence of a bit.